ROTUNDA

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"A Certaine Kind of Herbe"

Valleys Belong to the Rivers

Lively Paintings

Sculptural Fountains in Bronze

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ROTUNDA

the magazine of The Royal Ontario Museum

Volume 13, Number 2, Summer 1980

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Cover: The return of Odysseus; detail of Penelope, his wife. (Photo: A. Hollett)

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On a Remarkable Specimen of Serandite from Mont St. Hilaire, Québec

R.I. Gait

THE WORLD-FAMOUS QUARRY at Mont St. Hilaire, Québec, approximately 30 km east of Montréal, has been producing extraordinarily fine mineral specimens since 1961. The species list for this locality now exceeds 100 and there are at least another 30 species that are yet to be fully characterized. The quarry is in Mont St. Hilaire, one of the Monteregian Hills (Mont Royal is another), where the main rock type is nepheline syenite, an extremely tough, medium-grained igneous intrusive rock ideal for crushed rock for building purposes. Enormous tonnages of rock have been quarried, crushed, and sold. Occasionally crystal-lined cavities are discovered in the nepheline syenite, and it is in these that the most spectacular mineral specimens are found.

The Royal Ontario Museum has numerous mineral specimens from Mont St. Hilaire that have been assembled through purchases, donations, and collecting by various members of the Department of Mineralogy and Geology. Many of the mineral species are extremely rare in terms of world occurrences, and a few have been found only at Mont St. Hilaire. Many of them are known only as tiny crystals less than a few millimetres in size; however, these crystals are very beautiful when viewed through the microscope and are highly prized by collectors of micro-crystals. In contrast, other specimens from this quarry are famed for the exceptional size and quality of the crystals and are in demand by museums and private collectors all over the world.

St. Hilaire has produced the world's finest examples of several species; catapleiite is one that is rarely found in crystals exceeding 2 cm in diameter. In the early 1970s, however, a cavity was opened that contained a few magnificent rosettes of catapleiite up to 7 cm in diameter. Another extraordinary find, in the early sixties, was an enormous hole lined with superb crystals of siderite. This cavity was so large that collectors were actually able to crawl into it. Literally thousands of beautiful crystalled specimens were taken away and now repose in mineral collections all over the world. No similar occurrence of siderite has been seen at Mont St. Hilaire since then. There are many instances of "one time" finds since each cavity seems to be unique in terms of its mineral assemblage.

The mineral featured in this article is serandite, known only from a few localities in the world, none of which comes even close to producing such superb specimens as those from Mont St. Hilaire. The serandite in the accompanying photograph is one of the finest specimens of the mineral known; it is 18 cm high and 14 cm wide at the top of the radiating spray of crystals. The associated minerals are analcime (the large white crystals), natrolite, and mangan-neptunite (the last

two are not easily seen in the photograph). The specimen was collected by Bernard Baudin in the early seventies. Serandite was first described by Lacroix in 1931 from a nepheline syenite occurrence on the island of Rouma, Los Islands, now part of the Republic of Guinea, off the west coast of Africa. It was named in honour of a local mineral collector, J.M. Sérand. Serandite, a sodium *manganese* silicate, is closely related to pectolite, a sodium *calcium* silicate; both have triclinic symmetry, but whereas pectolite is usually white, or very pale shades of green or grey, and occurs as splintery, needlelike crystals, serandite is usually pink or brilliant orange (as in this specimen) and occurs as thick prismatic crystals. The main physical properties of serandite are two very good cleavages at 94° to each other, specific gravity of about 3.3, and a hardness of 5 on the Mohs scale. The principal element of its crystal structure consists of long chains of silicon-oxygen tetrahedra; the chains lie parallel to one another along the length of the crystals and are joined together by the other atoms in the structure: sodium, the hydroxyl group (OH), and manganese. The chemical formula is $NaMn_2Si_3O_8(OH)$. Although there still remains some dispute, it is thought that serandite and pectolite are related to the Pyroxene Group of minerals.

The Royal Ontario Museum is indeed fortunate to have had the opportunity to purchase this superb specimen from the well-known Bernard Baudin Collection.

Serandite from Mont St. Hilaire, Québec. The specimen is 18 cm high. (M36481 ROM)
Photo by William Robertson, ROM.

R.I. Gait is a Curator in the Department of Mineralogy and Geology.

"A Certaine Kind of Herbe"

Smoking Pipes of the Ontario Iroquois

Peta Daniels

TRAVELLING AMONG THE IROQUOIS in 1535, Jacques Cartier noted:

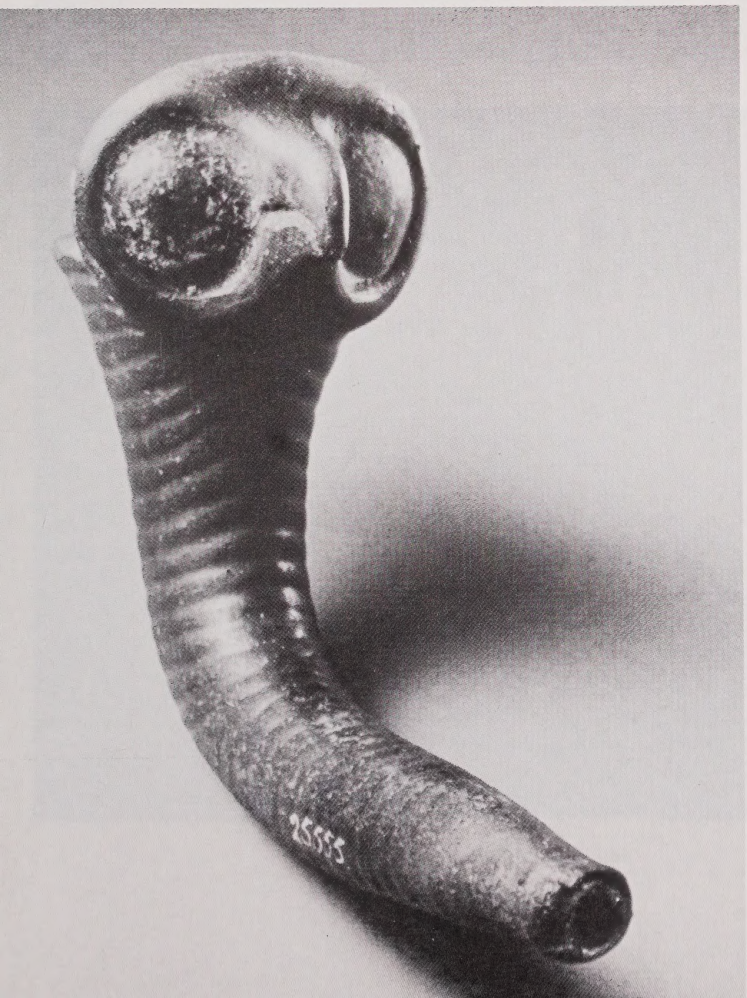
> There groweth also a certaine kind of herbe, whereof in Sommer they make great provision for all the yeere, making great account of it, and onely men use of it, and first they cause it to be dried in the sunne, then weare it about their neckes wrapped in a little beasts skinne made like a little bagge, with a hollow peece of stone or wood like a pipe: then when they please they make pouder of it, and then put it in one of the ends of the said Cornet or pipe, and laying a cole of fire upon it, at the other ende sucke so long, that they fill their bodies full of smoke, till that it commeth out of their mouth and nostrils, even as out of the Tonnell of a chimney. They say this doth keepe them warme and in health: they never goe without some of it about them. We our selves have tryed the same smoke, and having put it in our mouthes, it seemed almost as hot as Pepper.
>
> *The Voyages Traffiques & Discoveries of Foreign Voyagers*, Richard Hakluyt

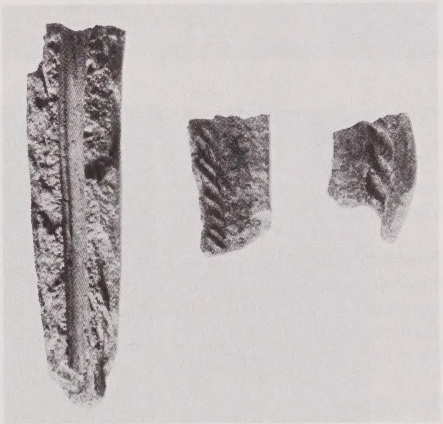
Platform pipes, dating from 1000 B.C. to A.D. 1000, are among the earliest pipes found on Ontario archaeological sites.

Of all the commodities and customs that the early explorers carried with them when they returned to Europe from the New World, tobacco and tobacco smoking must surely be among those that have had the greatest and longest-lasting social impact. By 1565 Europe had adopted smoking as a pastime, and more than four centuries later, for better or for worse, we are still smoking. And yet it is almost certain that when the Europeans departed for their homelands with the accoutrements of smoking, they took with them little or no understanding of the deep cultural significance of tobacco in the New World.

Like the agricultural mainstays of Iroquoian life—corn, beans, and squash—tobacco was not indigenous to Ontario. Native tobacco, *Nicotiana rustica*, stronger and harsher than modern tobacco, originated in the Andes of South America. From there it was transmitted to North America through the lengthy process of hand-to-hand trade. Seeds from an archaeological site in Middlesex County indicate that by A.D. 1000 tobacco was being grown in Ontario. It may have been domesticated in New York State by as early as A.D. 500, in which case it would almost certainly have been obtained by Ontario inhabitants through trade. However, plant matter decomposes quickly in most archaeological contexts and there is therefore little evidence of tobacco's first introduction to the province. Two relatively new archaeological techniques—pollen analysis and soil flotation (used to separate seeds from soil samples)—are beginning to provide more detailed information on the flora of prehistoric sites.

Tobacco was reportedly grown by the Huron in





Top: Early, middle, and late Iroquoian clay pipes without effigies.

Bottom, left: Clay owl effigy pipe from Brant County. The eyes of this owl were probably originally filled with powdered shell or shell discs, which would have made them even more striking.

Bottom, right: Broken pipe stems reveal the impressions of sticks and cords which burned away during firing and left stem holes.

small plots beside the longhouses, perhaps because it was sheltered there. The greatest amount of tobacco, however, was grown by the Neutral in southwestern Ontario, and the Petun in the region southwest of Georgian Bay. It was a major item of trade with the other Iroquoian-speaking groups in the province, the Huron and the St. Lawrence Iroquois, and with the Algonkian speakers to the north.

Ethnological records indicate that, in addition to tobacco, at least twenty-seven other plant substances were smoked in historic, and probably also in prehistoric, times. Among them were the leaves, bark, flowers, roots, and seeds of various species of sumac, willow, hawthorn, dogwood, and goldenrod. Even when tobacco was available it was often mixed with other plant substances.

The earliest smoking pipes found on archaeological sites in Ontario are the straight tubes and unusual platform pipes of the Initial Woodland Period (1000 B.C.–A.D. 1000). These pipes were introduced through trade. Their style, and in some cases the raw material of which they were made, can be traced as far south as the Hopewell Culture of Ohio. The Hopewell developed vast trade networks extending from the Gulf of Mexico to northern Lake Superior. Copper from Lake Superior occurs on Hopewell sites, and conch shells have been found on Ontario sites.

In the early stages of Iroquoian culture (c. A.D. 700), pipes of local manufacture become prevalent on archaeological sites—beginning with small, crudely made, elbow-shaped forms in clay, and culminating with the beautifully executed pipes of the later periods (A.D. 1400–1650).

Pipes were made of both clay and stone. Other materials may have been used, but have not survived. Some of the pipe stems, for example, were probably made of reeds or of wood. Stone pipes, in particular, may exhibit well-finished, carved and polished bowls without stems. Finer clay was used for pipes than for pottery vessels, and the pipes were modelled around a grass core which burned away during firing. Many of these pipes were highly polished, and some were blackened, possibly by being rubbed with grease before they were placed in the fire.

The late Iroquoian pipes were made in a very wide variety of types which can be roughly divided into two groups: the effigy pipes (with representations of human beings or animals) and the non-effigy pipes. The non-effigy pipes are no less remarkable in their technical execution. Many of them resemble Iroquoian pottery vessels in shape and decoration (for example, castellations), but to date no distinct correlation has been found between decorations on vessels and those on pipes from a single site. A 17th-century reference reports that the pottery vessels were made by the women, the pipes by the men. We do not know, however, whether the men made only the stone pipes, while the women made the clay ones.

Undoubtedly the most fascinating of all the Iroquoian pipes are the effigies. Owls are the most prevalent of the bird effigies, although eagles, loons, and pigeons or ducks may be tentatively identified.

Right: A mirror reflects an owl behind a human effigy on an unusual clay Janus-face pipe from Victoria County.

Opposite page, top: Pinch-face pipes may represent a shaman (medicine man) performing a healing ceremony.

Opposite page, bottom: Human effigy pipe from Brant County made of unfired clay.

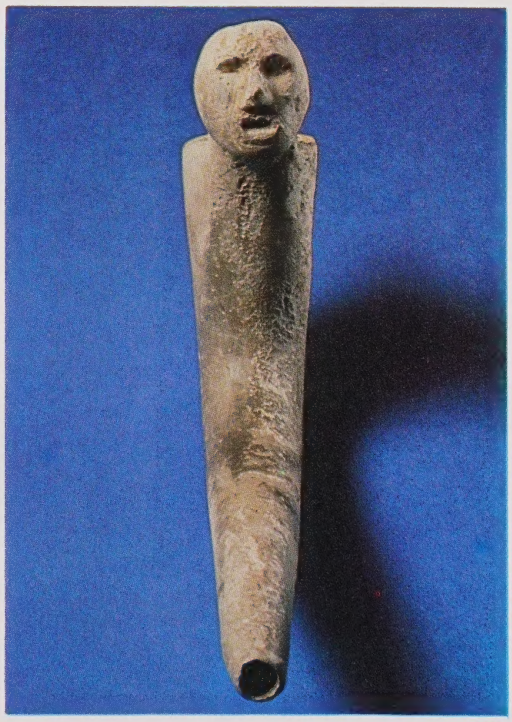
Bears are the most common mammal effigies in the ROM collections, but canines (wolves or dogs) are also present, and occasionally other creatures as well. Snakes, lizards, and turtles are also represented on pipes.

Theories regarding the significance of effigies are still largely speculative. Although some of the animals that occur on pipes are known to have been clan or tribal symbols, other clan symbols, and species of significance to Iroquoian society, are not represented.

Human effigies are equally diverse, although most represent only the face of the individual. Some display details such as facial markings (tattoos), hairdos, hats, and pierced ears. In a few, the mouth has been perforated so that the pipe "smokes" with the smoker. Others appear to be more abstract human forms.

Janus-faced pipes, in which two or more effigies face both towards and away from the smoker, are rare. Even rarer are pipes in which an animal and a human being are represented together. The human/owl pipe illustrated is an example.

One of the most consistent effigy forms is the pinch-face pipe. This crouching figure, hands to mouth and lips puckered, may represent a shaman (medicine man) in the act of performing a sucking ceremony. The shaman would remove an evil spirit or object which



was causing illness by sucking it out through a sucking tube. The strain of this act is indicated by the hollow cheeks and protruding ribs. The elongated head may symbolize the shaman's power.

Effigy pipes are seldom found intact on archaeological sites. Some, found with burials, appear to have been broken deliberately, and the two halves separated before they were placed in the grave. The intention may have been to release the spirit of the pipe in order that it could accompany the deceased to the next life.

Some effigy heads appear to have been worn or carried as talismans; their broken surfaces are smoothed by wear and perforations have been made, sometimes through the eyes. This may account, in part, for the number of effigies without heads in the ROM collection. We know, however, that broken effigies were also attached to new pipes and that broken pipes were repaired, sometimes being glued together with the owner's blood.

The Iroquois believed that some smoke was capable of carrying their thoughts and prayers to the Great Spirits, and that tobacco had been given to them for this purpose. It served not only as an invocation, but as a gift to the gods, and there is scarcely a recorded ceremony in which tobacco was not used in some capacity.

Business transactions, it was believed, were facilitated by smoking, because the smoke carried enlightenment to the brain. A pipe was shared as a demonstration of friendship and hospitality. Tobacco was thrown into the fire during curing ceremonies and was among the objects buried with the dead. There is one recorded instance in which tobacco was thrown on the fire daily and prayers were offered to the Sky in the expectation of a good corn harvest. Tobacco was also thrown into the water to invoke good fishing or to appease the spirits that lived in the water and thereby ensure a safe journey—a tradition still observed by many northern travellers.

Cartier's arrival in 1534 heralded the end of Iroquoian society as it had previously existed. Champlain followed in 1609 to establish trade networks and to begin colonization. Trade goods such as iron axes and knives, copper kettles, and glass beads were quickly adopted to replace their less refined Iroquoian counterparts.

Regrettably, the impact of the fur trade was even more profound. Competition for control of trade with the French aggravated tribal and territorial feuds and by 1650 at least three Iroquoian groups—the Neutral, the Petun, and the Huron—had been destroyed or disbanded.

That the importance of Iroquoian pipes extended far beyond their utilitarian function is, perhaps, best illustrated by their continued use throughout the period of the fur trade. Through two centuries of change, and despite the availability of European kaolin pipes, native pipes were never completely abandoned. In 1845, while visiting Manitoulin Island, Paul Kane observed a man carving a stone effigy pipe, using an old knife and a broken file. Kane was intrigued by the design of the pipe. When he asked about its origin, the man replied simply that his forefathers had made similar pipes and he therefore supposed that the design had always been used.

Above: An assortment of animal and bird effigies, including (left to right) clay bear, weasel, possible dog or wolf, loon, owl, and unusual stone bird. The weasel is also a rattle—the head is hollow except for a small piece of grit. A few other rattling pipes occur in the ROM collections.

Right: Stone bear effigy pipe from Wentworth County.

Left: A lizard clings to the side of a stone pipe from Brant County; a snake and a turtle appear on clay pipes from Simcoe County.

Below: A selection of human effigy pipes. The stone pipe in the centre shows a man wearing the head of a bear.

Peta Daniels joined the ROM in 1967 as a secretary, and is now a technician in the Department of New World Archaeology. Her work is concerned primarily with the management of the records for the department's extensive collections, particularly those from Ontario. Many of these artifacts were collected in the late 1800s. Peta is at present studying anthropology at the University of Toronto.

Photos by William Robertson, ROM.

Valleys Belong to the Rivers

Floods and Flooding

Walter M. Tovell

THIS ARTICLE WAS PROMPTED by the publicity surrounding the 25th anniversary of Hurricane Hazel—the most significant Canadian natural disaster. The timeliness of the article is emphasized by the fact that as recently as 21 March 1980 the Don River flooded in Toronto, blocking road and railway traffic in the neighbourhood of the Bloor viaduct and the Don Valley Brickyard. At the same time, Port Hope suffered a reported $10,000,000 in damages from the rampaging waters of the Ganaraska River.

Hazel, which passed over the greater Toronto area on 15–16 October 1954, dumped some forty billion gallons of water over the Humber River watershed in a forty-eight-hour period, and lesser but still enormous quantities on the other watersheds around Metropolitan Toronto. In the process, the creeks and rivers were converted into raging, uncontrollable torrents sweeping all before them. The volume of water draining down the Humber River was so great that between Dundas Street and the Bloor viaduct at the Old Mill the river became three times wider than normal and twelve feet deep. North of Toronto, the Holland Marsh was

Opposite page: The flooded market gardens of the Holland Marsh after Hurricane Hazel.

Below: Flooding at a bend of the Grand River south of Conestogo, 17 May 1974.

completely submerged under several feet of water—in effect, an arm of proglacial Lake Algonquin which occupied this area some 11,500 years ago was recreated.

In Metropolitan Toronto alone, damage from Hurricane Hazel totalled more than 28 million 1954 dollars, an amount that today would approach $100,000,000. More important, eighty lives were lost.

Although Hurricane Hazel produced the most serious Ontario flood of recent times, there were 430 floods recorded in the province between 1950 and 1970. A flood in the Grand River watershed in 1974 caused $7,000,000 damage, in 1979 the town of Field northwest of North Bay was flooded, and then came Port Hope. Such floods receive a great deal of attention, but in the strict sense most rivers flood periodically. The flood stage of a river is "any relatively high streamflow that overtops its banks".

In order to reduce the destruction of property and the loss of life from floods, it is necessary to know how rivers have developed and to understand the natural laws that govern their behaviour. With such knowledge and understanding, appropriate protective structures can be designed, but, more important, necessary political strategies can be developed to return flood-prone valleys to the rivers that created them over the span of geological time.

The waters of a river collect in a drainage basin, or watershed. It is here that precipitation falls to earth and runs off in rills, streams, creeks, and rivers to be delivered eventually to the oceans, possibly through intermediate bodies of water such as lakes. As rivers develop, their valleys are deepened and widened. The fluvial landscape evolves in response to the nature of precipitation (rain or snow), and the amount, the periodicity, and the energy of the flowing waters. A prominent landform of many fluvial landscapes is the flood plain. Flood plains are flat, featureless stretches of a river valley that have been built by the river and are attractive for settlement; their presence indicates that floods have occurred and will continue to take place from time to time. Flood plains provide the temporary storage for flood waters and the quiet, harmless discharge of the flood; they are part of the valley and belong to the river.

The pattern of the watercourses within a drainage basin forms a drainage net. Detailed studies of drainage basins, such as those that occur in Ontario, have determined that the net is a highly ordered system, a fact that allows geologists and engineers to predict the performance of the waterways. The ordered system of a drainage basin was actually described by J. Playfair in 1802, in the clearest of prose:

> Every river appears to consist of a main trunk, fed from a variety of branches, each running in a valley proportioned to its size, and all of them together forming a system of valleys, communicating with one another, and having such a nice

adjustment of their declivities, that none of them joins the principal valley, either on too high or too low a level; a circumstance which would be infinitely improbable, if each of these valleys were not the work of the stream that flows in it.

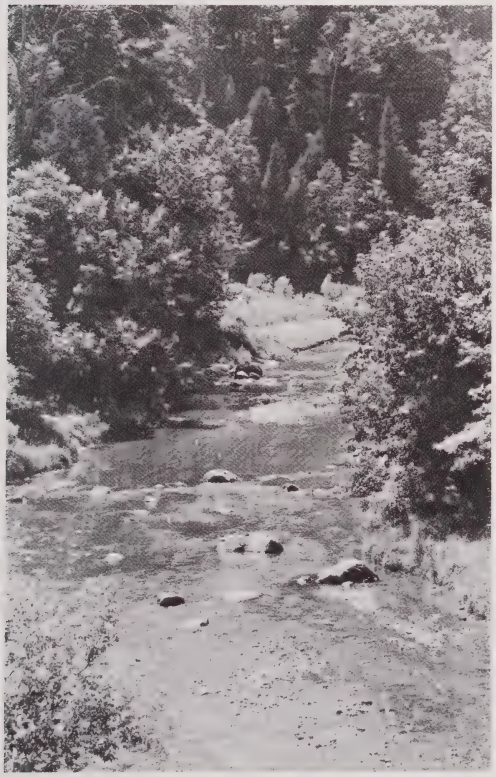
The most important conclusion derived from the study of a drainage basin is that the system of watercourses within it is in a state of dynamic equilibrium and any sudden change in any one of the many factors that control it, or the introduction of any new process into the system, will upset that equilibrium. Generally speaking, this is what happens when communities expand along a river or within a drainage basin. A new process is introduced into the system, a process called urbanization.

The discharge of a river, the rate of flow at a given moment in time expressed as a volume, is measured in cubic feet per second. The discharge is measured at recording gauges placed at various locations within the drainage basin. The records, called *hydrographs*, from these stations provide the basic information regarding the behaviour of a river. Since hydrographs indicate the way in which the fluvial system is behaving, they can be likened to an electrocardiogram which indicates the behaviour of the heart.

In Ontario, hydrographs show peak flows in the months of March and April, corresponding to the periods of melting of the winter snow cover; melting is often accompanied by rain. Quite naturally it is during these periods that most floods are expected. Climatic events such as Hurricane Hazel, which passed over in the month of October, and severe thunderstorms may cause flooding at any time.

The prediction of floods and their magnitude is one of the most important functions of land-use planning in urbanized areas. It is done through the statistical study of hydrographs, when records are available for a sufficiently long period of time. These calculations provide the *recurrence intervals* or *return periods* for any given size of flood in a given river, which are identified by such terms as "10-year flood", "30-year flood", "100-year flood". Each "year flood" has a certain discharge value based on the available data and through statistical analysis projections of future discharges can be made. However, the term "30-year flood" does not mean that a flood of the same magnitude can be expected to recur every 30 years, but that *in all probability* 10 such floods occurred over the last 300 years and 10 more will occur over the next 300. If you like playing the odds, a "30-year flood" means that there is a 3.3% chance that a flood of that magnitude will occur in any one year. The calculated return periods of floods are of critical importance in designing structures and planning appropriate uses for the flood-prone areas of river valleys.

The volume of water carried by rivers and streams in a drainage basin is called the run-off and is not only



Above: River valley and eroding west slopes of the Andes in Peru.

Left: Highland Creek. This stream in the urbanized Borough of Scarborough became a raging torrent on 27 and 28 August 1976 as a result of two rainstorms.

Opposite page: The flooded Qu'Appelle River in the town of Lumsden, Saskatchewan, April 1974.

adjusted to the natural geographic features of the drainage basin but is also related to the amount of precipitation over the watershed. But the run-off is only part of the total volume of the precipitation. Some water is used by the vegetation, some seeps into the ground, some is stored in swamps, ponds, or lakes, and some evaporates; the run-off is what is left over.

As urban areas expand in drainage basins many of the processes described are greatly modified, because urbanization alters the earth's surface so that the relationship of precipitation, infiltration into the ground, the use of water by vegetation, and run-off is affected. The result is that a given storm which under non-urban conditions would not result in a flood will under urban conditions produce a flood.

The aftermath of a storm in Toronto on 27 August 1976 provides an example of the effect of urbanization. The storm dropped more than 340,000,000 gallons of water over the Highland Creek watershed in eastern Metropolitan Toronto. Computer studies of the storm and the associated flood indicate that the amount of the peak discharge was almost equal to the discharge at the time of Hurricane Hazel in 1954! The engineering study of the 27 August flood concluded in part:

> . . . the Highland Creek has been transformed from a rural watershed to a highly urbanized watershed over the last 25 years. As such, the Creek valley has taken on two main functions: as the principal "storm water collector" for much of the borough of Scarborough, and as "open space" for urban recreational uses.

In recognition of the potential damage and loss of life from floods, the Provincial Government has established guidelines for planning the use of flood-prone lands. Much of the responsibility for identifying such lands, nearly all in flood plains, rests with the conservation authorities. The designation of certain areas as hazard lands recognizes the historical behaviour of a river and its tributaries in a drainage basin and the effects of changes in the use of the land within the watershed. To date it would seem that in implementing the guidelines for flood control the simplest, and in the long run the most economical, procedure is to return the valleys to the rivers wherever possible and to allow only developments that will permit the safe and quiet passage of the flood waters.

The history of a river, which extends far back in time, can be read by geologists. Thus the fact that certain flood events recorded in the short span of historical records, and the even shorter span of human memory, may have occurred only once is no excuse for the belief that "it cannot happen again". By the same token, "it cannot happen here" is not a valid assumption simply because no flood has ever been recorded in a particular area. Such presumptions, with their disregard for natural processes, lead only to disaster.

Unfortunately disasters will continue to occur—principally because the settlement pattern in Ontario followed flood plains. However, planners guiding the growth of municipalities beyond the limits of the older communities can take heed of the potential dangers in flood-prone areas and through land-use policies and planning based on nature's laws prevent future calamities.

Opposite page: Silt cloud at the mouth of the Grand River, 18 May 1974.

Below: Flooding on the Grand River at Brantford, 18 May 1974.

Monthly percentage distribution of floods in southern Ontario based on maximum mean daily discharge											
Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2.0	8.2	27.4	43.3	8.8	0.7	1.0	0.4	0.2	1.4	1.2	5.4

Dr. Walter M. Tovell, Head of the ROM*'s Ontario Museums Support and Advisory Services, has had, as a geologist, a long-standing interest in environmental problems related to his discipline. He writes on floods and flooding from experience gained from field work and his association with the Metropolitan Toronto and Region Conservation Authority.*

Photos: p. 10, The Toronto Star; *pp. 11, 14, 15, Ministry of the Attorney General of Ontario; p. 12, Government of Saskatchewan; p. 13 left, W.M. Tovell; p. 13 right, Servicio Aerofotografico Nacional Peru.*

The Growing Collections

Photo by Photography Department, ROM.

The Far Eastern Department has recently acquired a very fine Decree of the 7th Dalai Lama Vajradhara in the form of a yellow silk banner mounted on brocade. Such banners, especially those of the imperial yellow of the Ch'ing Dynasty, are rare documents of Tibetan religious and political intercourse. At the top of the banner is the image of Tsong-Kha-pa, founder of the Yellow Hat Sect of Buddhism (Ge-luk-pa), whose temporal representative is the Dalai Lama. Below a short invocation is the small red seal of the Regent of Lhasa, witness to the Decree.

Following the elegantly written text is a most ingenious example of symbolic representation (illustrated). A decidedly un-Chinese dragon coils through Ch'ing-style clouds, holding jewels in its rear claws and the great red seal of the Dalai Lama Vajradhara with its forefeet. The unusual trilingual seal, in Tibetan, Mongolian, and Chinese, uses the title "Vajradhara", which was granted to the Dalai Lama by the Mongol Altan Khan in the last half of the 16th century upon his conversion to Lamaism. The seal was used by successive Dalai Lamas, and the heavily Ch'ing-influenced style of this banner indicates an 18th-century date.

On the left of the dragon is Lha-mo (dPal-lDan-Lha-mo), patron goddess of the city of Lhasa and the tutelary deity of the Yellow Hat Sect. She carries a skull cup full of blood and is adorned with snakes, skulls, and blue ashes. Her mule, bridled with snakes, carries a lion-skin saddlecloth, a pouch full of Evil, red tablets and a pair of dice to divine the fate of man, and a magic ball of thread. Lha-mo rides through the sea of blood created when she wreaks vengeance on unbelievers and sinners.

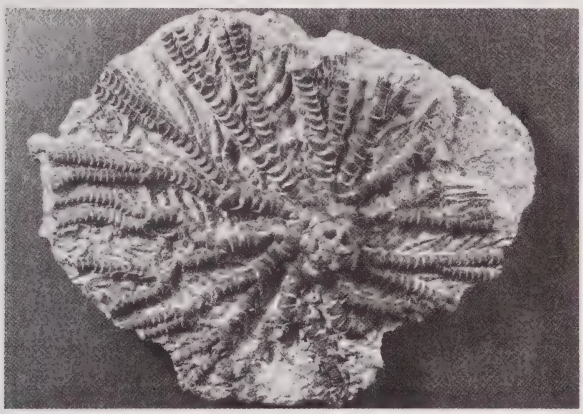
On the right is a Guardian King, probably Vaiśrāvana (rNam-Sras), god of Wealth and Protector of the North. His armour drips with jewels, and he carries weapons and the magic treasure ball. Lha-mo and Vaiśrāvana are national Tibetan deities, particularly appropriate to this Decree of the Dalai Lama. The execution, style, condition, and cultural content of this banner make it a major addition to our Tibetan collection. E.N.-B.

Photos by David Rudkin, ROM.

Left: Slab of Isocrinus oregonensis.

Below, left: Individual specimen of Isocrinus oregonensis.

Below, right: Block containing Schizophoria williamsi.



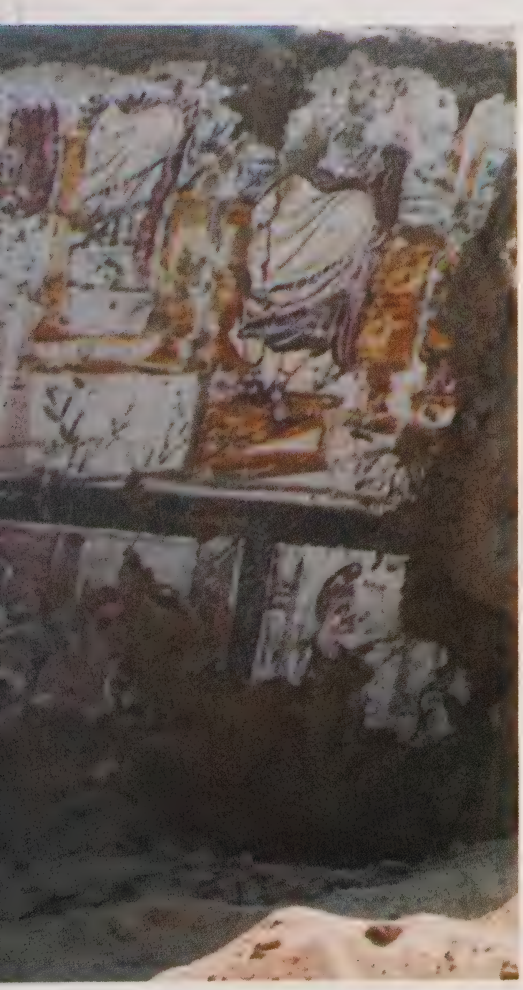
In 1979 the Department of Invertebrate Palaeontology purchased several interesting and unusual display-quality specimens including a fine slab and individual specimens of the crinoid *Isocrinus oregonensis*. Our 30-million-year-old examples are from Oregon. *Isocrinus* is a genus of stalked crinoid, or sea lily, which has existed for at least 190 million years. Living examples may be found today in both shallow and very deep sea water. The fossil specimens from Oregon resemble crinoids living now in the Caribbean sea.

Also purchased was an interesting example of fossil preservation in a 300-million-year-old block from northern Utah containing fossil brachiopods *Schizophoria williamsi*. Sold commercially as "fossil sculptures", these marine shells are replaced naturally with silica and have been partially etched with acid to stand out in relief from the limestone matrix in which they were preserved.

J.W. and D.R.

Right, Plate 1: The footwashing scene. The edge of the dome spandrel with the remains of a "Season" figure is at the top right.

Below, Plate 2: The east wall, which includes Hephaistos leading a group of gods to witness the adultery of Ares and Aphrodite.



Roman Frescoes in the Dakhleh Oasis

Lively Paintings

A.J. Mills

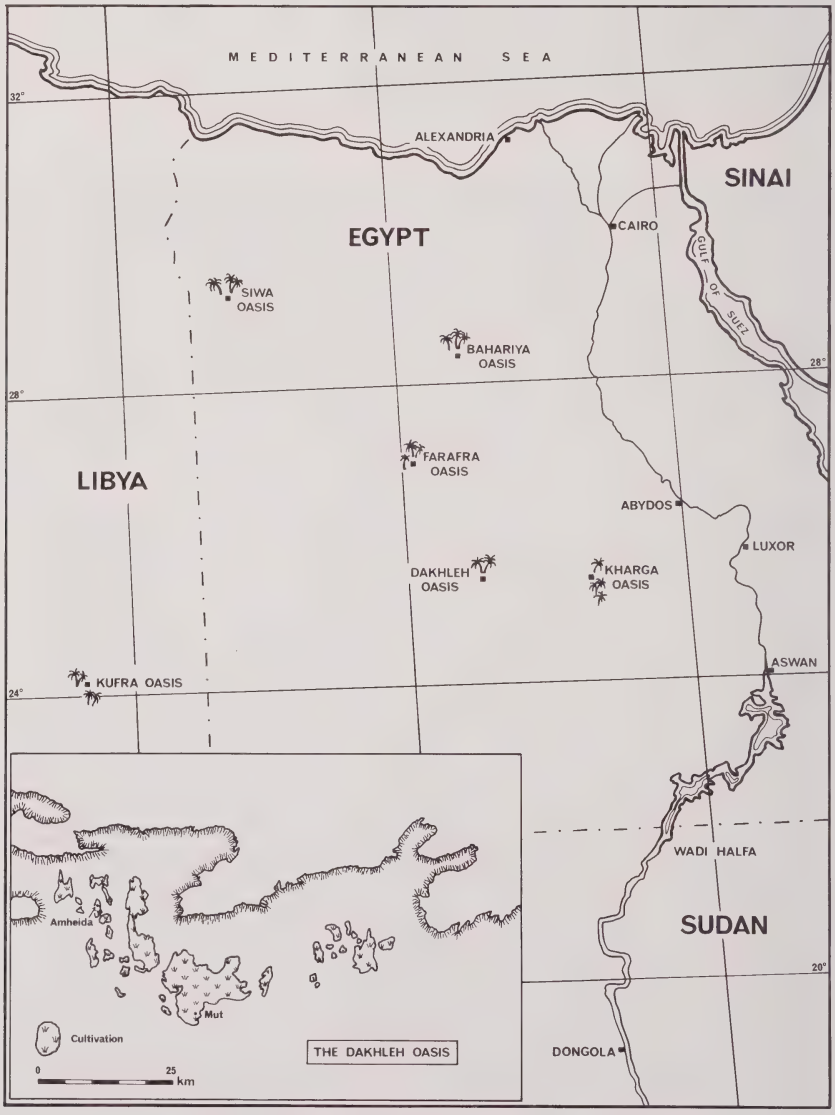
THE DAKHLEH OASIS is the largest of the oases in the Western Desert of Egypt. It is a sausage-shaped area some 80 kilometres long and up to 25 wide, which lies under the south face of a 500-metre-high limestone escarpment. It is about 600 kilometres southwest of Cairo as the crow flies, and is readily accessible today by a paved road. The oasis is created by a combination of two major elements. The flat cultivable land is composed of rich clay soil, the remains of an old lake bed. More important, however, in this rainless desert is the underground water which comes to the surface by an artesian process and irrigates the land. Without the water there could be no oasis and without the soil man could not support himself here. Dakhleh Oasis is a place of great beauty and of great simplicity.

For three years the Royal Ontario Museum has been involved in the Dakhleh Oasis in a joint archaeological venture with the Society for the Study of Egyptian Antiquities. Briefly, we are concerned to study the history of the oasis since man first settled there, seven or eight thousand years ago. As human development is greatly affected by the environment, it is very important for us to understand the changes in climate, water supply, soil conditions, and the other myriad facets of the everyday surroundings in which man finds himself. It would not be very enlightening to study Ontario farming without having the background information about such things as annual rainfall, growing seasons, and soil conditions. Of course, our real study is of man and his development. Just as it is necessary to know whether the Ontario farmer is of Hungarian or Danish origin to understand something of his attitudes to the land and his animals and to be acquainted with his technology—his seed drills and milking parlours—so it is necessary to know the relationships and technologies of ancient man.

Dakhleh is an area that has never been studied and so we have had to start from scratch. This is exciting because virtually everything we discover is either completely new and

strange or is a new and distant occurrence of something familiar elsewhere. Our somewhat plodding approach to the study is one designed to yield as much information as possible. It means first going carefully over all the ground, looking for natural features and the evidence of their changes and at the same time recording all the archaeological remains. By the end of this initial survey we will have built up a picture of the whole area through all the different phases of cultural evolution. We will know the number of Neolithic butchering sites and the number of Roman farmsteads. We will know the relationship of each to water and other resources and the proximity of each to other sites of the same period. We will begin to understand why the population at one period was greater than at another and how local traditions and "foreign" influences mixed together to form new trends. We will also have moved from the rather simplistic position of "What went on in Dakhleh?" of three years ago to one that encompasses thousands of questions of increasing detail concerning both general trends and internal structure. To find answers, it is best to argue with the spade and excavate at the sites where it seems most probable that the information will be found. The first two field campaigns of the project have been occupied with surveying and we have now covered a good third of the whole area. There will have to be two or three more seasons of survey before our block outline is complete and we can then begin to fill in the details and colour by excavating.

The little that the ancient Egyptians tell us of Dakhleh indicates that the products of the area were



Map of Egypt. The inset shows the location of Amheida within the Dakhleh Oasis.

of agricultural origin—wine in particular is mentioned—and that it was a place of banishment at times. Our archaeological evidence tends to confirm that the land was the economic foundation of the oasis, although we are also getting hints of industry. After its annexation to the Roman Empire by Augustus in 30 B.C., Egypt became known as the "bread basket of Rome". The rich soil of the Nile Valley encouraged the Romans to seek increasing supplies of grain there, and presumably the country was working to near capacity when in the middle of the 1st century A.D. an agricultural disaster in the Fayum province left it with an excess of farm labourers. The evidence from Dakhleh suggests that a migration of farmers to the oasis took place about that time and we have a somewhat jerry-built stone temple (Plate 4) with a series of 1st-century emperors' names in the sanctuary and a large number of well-spaced, similar farmsteads (Plate 3) which all bear the stamp of governmental housing schemes. That the enterprise was successful is also becoming apparent for there are 3rd-century tombs (Plate 7) with elaborately painted scenes depicting quite an extensive array of produce, including dates, olives, grain, and grapes, and there is evidence that large towns, such as Amheida (Plate 8), had grown up. In fact, it is quite clear that land use by the Romans in Dakhleh was much more extensive than it is today. It also seems that the population of the oasis dwindled rapidly at the end of the Roman period, primarily as a result of environmental changes.

The frustrations of archaeological surveying are as numerous as the rewards. Paradoxically, the two are often combined and an exciting find has to be left in the ground with only a tantalizingly small part revealed. Just such an exciting discovery was made last November and it gives us further insights into the Roman period occupation of Dakhleh.

The existence of the town of Amheida has been known since the early 19th century, when the first European to visit the oasis, Sir Archibald Edmonstone, mentioned it in the published account of his journey. The town has never, however, received scholarly or

Top, Plate 3: A small Roman farmhouse of the 1st century A.D. in western Dakhleh.

Bottom, Plate 4: Temple of Deir el-Haggar, 1st century A.D.

academic attention. This is probably due to the fact that it is a mound ruin situated between the 1st-century Roman stone temple and a fascinating medieval Islamic town, el-Qasr ed-Dakhil, both of which have distracted attention from Amheida. Nevertheless, Amheida is a large and important site. Here we found a connected series of mounds more than ten metres high. They are almost certainly partly natural, for the Romans often preferred to live just above the level of a surrounding damp plain. The whole area of the town covers some one hundred and ten hectares and immediately adjacent to it to the south is a vast cemetery of over two thousand tombs, some of them decorated and many of them elaborate, vaulted above-ground structures.

With a cemetery of such size and richness, one expects a town of considerable importance. If one searches the surface of any site, one will come up with a handful or a bagful of potsherds which will identify the date of the site. The surface of Amheida is virtually paved with sherds. Most of the Roman sites in western Dakhleh consist of some buildings with some vacant land separating them. Almost all the area of Amheida is covered with structures. Everywhere are buried walls and from place to place, above ground, can be seen the remains of the second storeys of the mud-brick buildings of the town. In one area of high ground, we discovered a single decorated sandstone temple block, a few moulded architectural blocks, and thousands of small stone chips and bits. Another part of the site bears masses of clinker and fragments of crucibles containing copper. Elsewhere a series of pottery kilns—a rare find in Egypt—can be seen.

Testing, which is the most one may do to such a site while surveying, reveals that the rooms are filled mainly with blown sand and fallen building debris. Evidence from the cemetery and the town suggests an occupation of up to five centuries in duration. Although no stratified room deposits were tested, they undoubtedly exist here and will eventually give us valuable information about the whole sequence from the 1st century B.C. to the 4th century A.D.

Near the centre of the site, at the edge of one of these mounds, is a large mud-brick building, a complex of fifteen or more rooms. At its western side there is a narrow street. The southern and eastern sides of the building slope away under sand dunes, and the northern side seems to be formed in a peristyle court. It is a

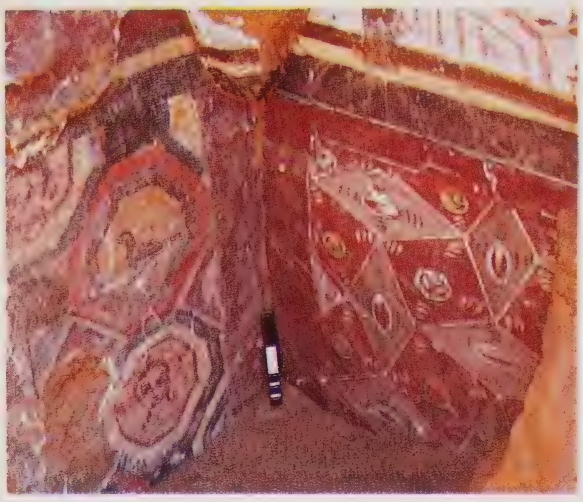
two-storey building with only the lower storey preserved and it is buried almost to the ceiling of that ground floor. A staircase connecting the two storeys was discovered in the centre of the complex. Most of the lower rooms have vaulted ceilings—a construction that gives a high ceiling with great strength to support the upper floor. The interiors of these rooms have smooth walls, plastered with fine mud, which are occasionally brightened up with a coat of white lime plaster. Such rooms, which are from 3 to 4 metres long and 1.5 to 2.5 metres wide, are to be seen everywhere at Amheida and there is nothing in their arrangement to suggest a building of any particular importance or special nature. In addition, however, the building contains two rooms which are square in shape, about 4.5 metres a side, with domed ceilings. These are not adjacent to each other and one of them has plain mud-plastered walls.

As luck would have it, we began our test here in the other domed room and almost at once came down on a plastered wall with the scene of Plate 1 painted on it. Stunned into an awed silence by the vivid colours and fine work of the painting, we slowly uncovered, at the right side of a doorway into the room, this representation of what we thought was Mary Magdalene washing the feet of Christ. For a while I paced around trying to discern the architectural plan of a Coptic church in the wall tops and then I returned to our test. By that time work had progressed to such a point that my initial interpretations were overturned, but we were growing more and more excited, because the east wall (Plate 2) was uncovered sufficiently for us to see a procession of gods, including Dionysus, Apollo, Helios, and Poseidon, and the marvellous picture of Polis, the

Opposite page, Plate 5: Perseus, on the left, holds the head of Medusa during his rescue of Andromeda from the sea serpent.

Top, Plate 6: Decorative panels beneath the registers of painted scenes.

Bottom, Plate 7: Painting from the tomb of Pady-Osiris depicting some of the products of Dakhleh.



representational embodiment of the City. There was absolutely no question as to the identity of these Classical deities, for the name is written above each figure. Of course these pagan scenes would not be found in a Coptic church and we quickly realized our initial error. After further testing and digging down to within two metres of the floor, we became concerned that the paintings might be damaged without on-the-spot conservation and so for its own protection we carefully refilled the corner of the room with clean sand.

The paintings are superb and will require considerable study before pronouncements on their content and importance can be properly made. Preliminary dating considerations place the paintings in the early 4th century A.D. Considering that they are on ill-bonded plaster on the unprotected mud-brick walls of a ruined room, they are in excellent condition. To the left of the doorway of the north wall of the room is a depiction of the legend of Perseus and Andromeda (Plate 5), with Perseus on the left holding the head of Medusa, while he rescues Andromeda from being sacrificed to the sea serpent waiting at the bottom. At the right of the doorway is the scene in which the foot of a male seated on a fleece-covered stool is being washed by a serving maid while a noble lady—indicated by the halo—sits on a cushion and looks on. The scene probably depicts the return of Odysseus; however, parts of the iconography of that legend are missing here and in any case the washing of feet is a traditional welcoming gesture of great antiquity in the eastern Mediterranean world. To the right of that scene, on one of the four spandrels that support the dome, can be seen the ill-preserved remains of a figure. It has been suggested that this is one of the four Seasons.

There are the remains of several scenes on the east wall of the room (Plate 2). At the left of the bottom register is a building beside which Polis is seated. Next is the depiction of the adultery of Aphrodite and Ares, with a group of gods—Poseidon, Dionysus, Apollo, Herakles, and Helios—being brought as witnesses by the outraged husband, Hephaistos. Finally, in a scene separated from the former by a black framing band, there are two figures, one of whom wears the unmistakable Phrygian cap. Above all this is a scene with several recognizable as well as several uncertain elements. Unfortunately, the wall is destroyed in the middle of the scene. At the bottom is a series of fields with grass or shrubs growing in them and, at the left, a figure seated on a throne; in front of him are a rearing animal and a standing figure. In the centre of the scene is a running man whose long red cloak billows out behind. At the right is a pavilion containing identically dressed figures. Beneath these scenes the walls are decorated with small geometric panels (Plate 6), some of which contain representations of faces, birds, and other elements.

At ten days' distance by camel from the Nile of Upper Egypt, the Dakhleh Oasis must be one of the farther outposts of the Roman Empire. To find such lively paintings as these in a country where local artistic canons are so strongly conservative was a great surprise, but to find them so far from a major centre is an even greater thrill. I now have so many questions about this room and its significance that just a simple list would run on for pages.

Opposite page, Plate 8: The town of Amheida contains many buried buildings and is covered in sherds.

Left, Plate 9: Staircase leading to the ground floor of the building with the painted room.

A.J. Mills graduated from McMaster University, Hamilton, in 1959, and went on to graduate studies in Egyptology at the University of London. In his first field season in 1960 he was assistant to Professor Emery at Buhen in Nubia. In 1963 he joined UNESCO and was seconded to the Sudan Antiquities Service as field director of the Nubian Salvage Campaign in Sudanese Nubia. Mr. Mills came to the ROM in 1972 and is currently Associate Curator in the Egyptian Department. He has been field director of the Dakhleh Oasis Project since its first season in 1977.

Photos: pp. 18–19 (2), 21 (2), 23 (top), 24, 25 (2), A. Hollett; 20, Carole Richards; 22, R. Frey; 23 (bottom), A.J. Mills.

Right: Bronze figure of a faun by Guglielmo Fiammingo from Ammanati's Neptune Fountain.

Below: Ammanati's Neptune Fountain *in the Piazza della Signoria in Florence.*

From Ammanati to Georg Raphael Donner

Sculptural Fountains in Bronze

K. Corey Keeble

TO THE BEST OF OUR KNOWLEDGE, it was about the year 1551 that Duke Cosimo I of Florence conceived the idea of erecting a monumental fountain in the Piazza della Signoria in Florence. Pipes for the flow of water to the fountain were laid down from the Porta San Niccolò and the general design was entrusted to Baccio Bandinelli—the same Bandinelli who was so expertly vilified in the famous autobiography of Benvenuto Cellini.

Bandinelli had studied Montorsoli's *Neptune Fountain* at Messina, and in typical fashion promised the duke he could do better:

> . . . I have carefully investigated the masters who have worked on the fountains at Messina, and I feel they are magnificent. I promise His Excellency that, if my plans please him, I will make him a fountain which will not only surpass any that exist on earth, but I vow that the Greeks and Romans never had such a fountain.

The promise to outdo the Ancients was characteristic of Bandinelli, and as so frequently happened, his lavish promises came to nothing. He had intended the centre of the fountain to be dominated by an enormous marble figure of Neptune, and in 1558 a massive marble block that seemed suited to this grand purpose was excavated at Carrara. In 1559 the quarrymaster at Carrara was demanding the payments still owing on the marble block, while Benvenuto Cellini and Bartolommeo Ammanati, a former pupil of Bandinelli's, were raising objections to Bandinelli's commission, arguing that the fountain should be the subject of a competition. Bandinelli, according to contemporary accounts, responded to the request for a competition by hastening to Carrara to mutilate the marble block. He might have spared himself the effort. He died in 1560 and the competition which he must have dreaded not only was held, but was expanded to a number of other sculptors including Vincenzo Danti and Giovanni Bologna. The winner was Ammanati, presumably—in part at least—because of his previous experience with sculptural fountains and his execution of monumental works in marble.

In 1561 Ammanati began to carve the enormous central figure of Neptune on his sea-chariot drawn by four sea-horses; by 1565 the figure was complete and was exhibited at the festivities in honour of the marriage of Joanna of Austria to Francesco de' Medici. The basin of the fountain was to be decorated with a number of sculptures in bronze, and these were executed with the help of assistants between 1571 and 1575. In 1575 the fountain was dedicated; it was to become known as the most famous fountain of the century. Unfortunately, Ammanati had to adhere to some extent to concepts devised by Bandinelli, and the work suffered accordingly. He was also faced with the difficult task of setting up the *Neptune Fountain* in a very narrow area of the Piazza just off one angle of the walls of the Palazzo della Signoria, so that the finished work lacks something of the grandeur it might have assumed had it been better placed. Many observers have commented on the divergence in scale between the monolithic central marble figure of Neptune and the smaller bronze statues of the basin. The Neptune quite simply is too large and overpowering, and too stolid in comparison with

the writhing bronzes of the basin. The citizens of Florence, long accustomed to exercise their own aesthetic judgement on the works of art erected in their midst, delivered a harsh comment on the Neptune in the derisive couplet:

Ammanato, Ammanato / Che bel marmo hai rovvinato.

(Ammanato, Ammanato, that's a fine block of marble you've ruined!)

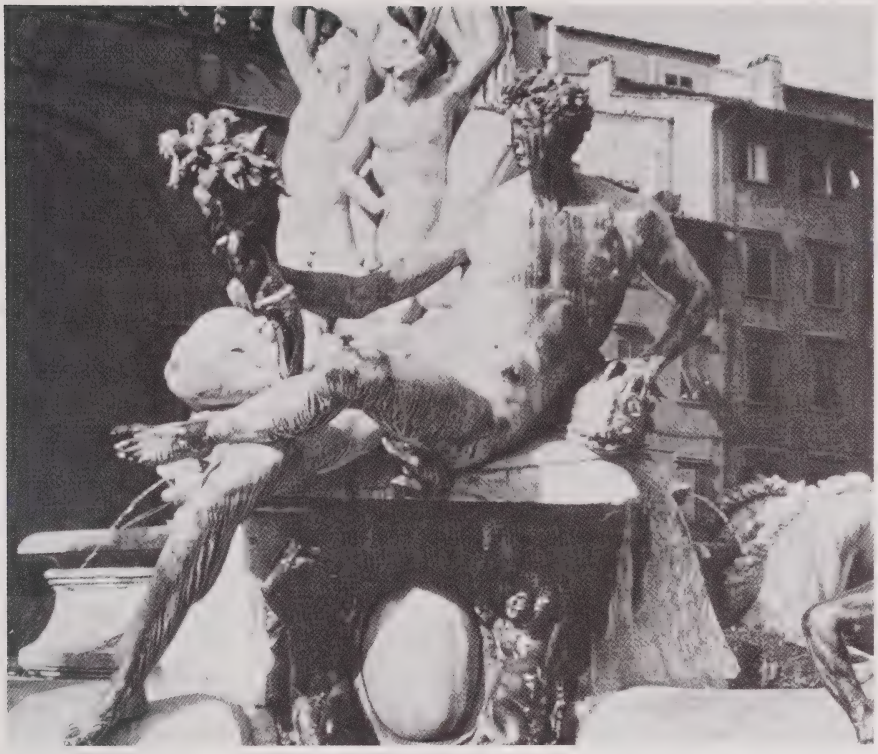
The bronzes, however, present a different story. They are unquestionably the most successful parts of the composition, and have exerted a powerful and long-lasting influence on the development of similar sculptural fountains both in Italy and north of the Alps. The basin of Ammanati's fountain features four large bronze statues of allegorical type at the corners: two nude reclining figures of females representing Thetis and Doris, and two nude reclining males, a bearded river god based on a traditional Classical type and the figure of a youth (the exact identity of the two male figures is no longer known).

Below the four major bronzes are bronze cartouches and eight satyrs and fauns grouped in pairs. All the bronzes are conceived in the spirit of an ascendant Florentine Mannerism. Their elongated bodies, small heads, and long necks recall forms present in Florentine painting from the 1530s onward, such as Parmigianino's *Madonna dal Collo Lungo*, now in the Uffizi. In addition they are all strongly reminiscent of various works by Michelangelo. This is particularly evident in the form of one of the bronze fauns attributed to Ammanati's assistant Guglielmo Fiammingo, in which the turn of the head, the swing of the shoulders, and the twist of the arms and legs appear as a veritable paraphrase of Michelangelo's *Ignudi* in the Sistine Chapel.

While Ammanati was trying to cope with the marble Neptune for the fountain in Florence, another Neptune fountain, destined to exert its own influence on sculptors in Italy and north of the Alps, was being erected in the city of Bologna. It was the work of the imaginative young sculptor Giovanni Bologna (who, by the way, was from Douai, not from Bologna). Giovanni Bologna was offered the commission for a Neptune fountain in 1563; this allowed him to develop a concept which must have already been in his mind in 1560 when he was in the competition for the Neptune fountain in Florence. By 1567 the project was complete; artistically it represented a considerable advance over Ammanati's exercise in Florence. To begin with, all the sculptural parts of Giovanni Bologna's *Neptune Fountain* were of bronze, and the scale of each part was carefully coordinated and harmonized with that of the others. The fountain was adorned with bronze putti, dolphins, sirens, and cartouches, but its most important element was the central bronze figure of

Above: Bronze figure of Doris with a shell from Ammanati's Neptune Fountain.

Right: Ammanati's marble Neptune.



Bronze figure of a youth with cornucopia from Ammanati's Neptune Fountain.

Neptune, nine feet high and placed on top of a tall central plinth. Unlike Ammanati's static marble figure, Giovanni Bologna's *Neptune* was a marvel of exploitation of a 16th-century theory that favoured sculpture offering a "multiple view" to the spectator.

The idea of "multiple view" sculpture had been anticipated and pioneered by Michelangelo, and this compositional device became a major element in the design of Giovanni Bologna's bronze statuettes and in his larger sculptures. Unlike many earlier Renaissance sculptures, the Bologna *Neptune* is not meant to be seen from one vantage point only; instead, the total impact of its composition is obtained only by combining the visual impressions received by viewing the statue from several different angles. In this respect it is an extremely sophisticated composition, but one ideally suited for the development of certain outdoor sculptural types, such as monumental fountains forming the central feature of parks or squares. Being of bronze, Bologna's Neptune offered greater opportunities for the development of *contrapposto* than could ever have been the case with Ammanati's colossal but stolid marble.

In his bronze Neptune, Giovanni Bologna succeeded in another way in which some of his Florentine contemporaries and predecessors had faltered. The musculature of his Neptune is remarkable both for its anatomical accuracy and for its suggestion of force and power. Baccio Bandinelli had explored the delineation of powerful muscular forms but had fallen into bathos with his *Hercules and Cacus*, completed in 1534, which had reminded the ever-caustic Benvenuto Cellini of a sack of melons! By contrast Giovanni Bologna's Neptune approached the sublime. Here the musculature is not developed for its own sake but as a means of enlivening the surfaces of the bronze and as an appropriate metaphor for proclaiming the power of the god of the seas and oceans.

From the late years of the 16th century, monumental sculptural fountains of a type incorporating lessons derived from the *Neptune* fountains of both Bartolommeo Ammanati and Giovanni Bologna began to appear in the south of Germany; they are chiefly the work of Giovanni Bologna's northern (that is, Netherlandish) followers. There are three major Renaissance fountains in Augsburg, two by Adrian de Vries, and one by Hubert Gerhard. Gerhard's *Augustus Fountain* of 1588–94 is the earliest. Its name derives from the bronze statue of Augustus that stands at its summit. Gerhard was a true eclectic and while the tall central plinth of the *Augustus Fountain* with its bronze statue recalls Giovanni Bologna's *Neptune Fountain*, the basin, which features four large sculptures in bronze at its corners, is derived directly from Ammanati's *Neptune Fountain* in the Piazza della Signoria in Florence.

During the 18th century the *Augustus Fountain* was restored and somewhat altered, but its original appearance may easily be discerned from an early engraving of 1598 by Lucas Kilian, in which the disposition of the

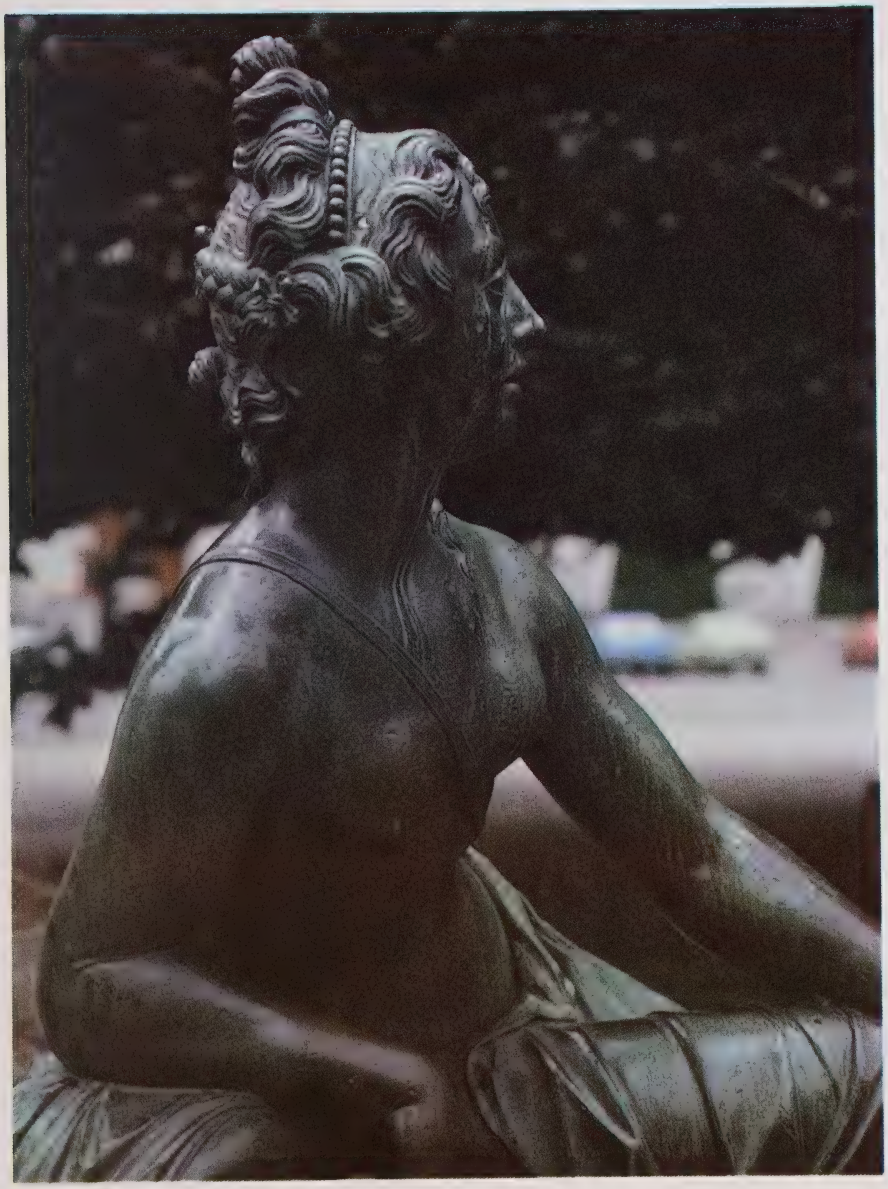
basin figures is clearly shown. Gerhard simplified Ammanati's concepts, reducing the number of basin figures to four personifications of the major rivers of Augsburg (the Lech, the Wertach, the Brunnenbach, and the Singold) and eliminating the attendant fauns and satyrs. The basin figures are shown as two male and two female nudes positioned so that they face outward, with their legs dangling over the edge and resting on a massive torus moulding that runs around the circumference of the basin. The deployment of the figures and their elongated proportions and contorted Mannerist poses all follow Ammanati's Florentine prototype, but visually Gerhard's fountain is in some respects more satisfying, owing to the greater harmony in material and scale of all sculptural parts. The stylistic affinity between Gerhard's personifications of the Augsburg rivers and Ammanati's bronzes is underlined in the details of the female nude representing the Singold. She is shown reclining with a cornucopia cradled against her left side; at her right is a large vase supported by her outstretched right hand. Her limbs and torso are arranged to exploit the potential of "multiple view" and in spite of the complexity of their arrangement they produce a typically Mannerist sense of stasis, or frozen movement.

Gerhard was also employed in Munich where his workshop continued the development of the Italian sculptural fountain in its new German locale. For the

Giovanni Bologna's Neptune Fountain *in the Piazza Nettuno in Bologna.*

Residenz in Munich he designed a *Perseus Fountain* that owed its inspiration to Benvenuto Cellini's celebrated exercise on that theme. Gerhard's workshop was also entrusted with another fountain for the Residenz, the *Wittelsbach Fountain*, in which elements from both Ammanati and Giovanni Bologna are combined.

The combination of features derived from the *Neptune* fountains in Florence and Bologna occurs also at Innsbruck in the *Leopold Fountain* erected by the court sculptor Caspar Gras between 1623 and 1629. In Italy the Roman Baroque was reaching its full glory, but at Innsbruck Caspar Gras adhered to Mannerist traditions, at least in so far as the basin figures of the fountain were concerned. For the basin he returned to the example of Hubert Gerhard, and set four large bronze allegorical figures at the corners—a further development of Ammanati's original treatment of the basin of his *Neptune Fountain*. At Innsbruck the basin features three nude female figures, a Diana, an Amphitrite, and a Moosgöttin (literally a moss goddess), and one male figure, a bearded Oceanus with a fish and an urn, the traditional attributes of a river god. Unlike the bronzes at Augsburg, Gras's four bronzes do not seem to have been intended as anything more than general mythological types. Stylistically, the Innsbruck Amphitrite recalls Gerhard's treatment of the Singold with its elaborate coiffure—hair piled, teased,



Bronze Amphitrite (detail) from the Leopold Fountain *of Caspar Gras in Innsbruck.*

and tortured into convoluted masses, plaited, braided, curled, and adorned with ropes of pearls. Like the Singold, Gras's Amphitrite is posed in a complex and contorted manner, legs crossed, one arm arched across the body, and the other resting against an urn, while the head is turned at an angle to the body to convey almost a sense of Florentine "multiple view".

The Oceanus at Innsbruck recalls the figure of the Lech at Augsburg to a certain degree, but it is treated more naturalistically, without the self-consciousness of Gerhard's artistry. The Diana and the Moosgöttin of the *Leopold Fountain* also perpetuate Mannerist forms, most obviously perhaps in the splendid Moosgöttin with its cool aloofness and precision of finely chiselled details, notably the sharply cut locks of the hair and the careful contouring of the details of the face—eyelids, nose, and lips.

Long after the Renaissance and Mannerism had yielded to the Baroque in Germany and Austria, the memory of earlier fountains like those at Augsburg, Munich, and Innsbruck remained. In the 18th century Austria's greatest Baroque sculptor, Georg Raphael Donner, came up with a new approach to the monumental sculptural fountain, in effect bringing to a Baroque climax developments that had been initiated by Ammanati and Giovanni Bologna in the 16th century.

Donner's *Mehlmarkt Fountain* (Corn Market Fountain) of 1737–39 in Vienna has been rightly acclaimed as one of his greatest works. The original fountain featured statues of lead—a favourite material for Donner's sculptures in metal. These have been removed to the Barockmuseum in Vienna, but some idea of how they appeared in their original setting can be obtained from the bronze copies that now stand in their place. The centre of the fountain is dominated by a female figure of Prudence resting atop a plinth decorated with spiral fluting to impart a sense of swirling energy. Around the ample basin are four large figures which are typical examples of Donner's absolute mastery of the human form, and of his fusion of observations drawn from the study of nature and of the Antique. Here there is the additional element of observations of sculptural types within a Renaissance tradition. The four figures recall the iconography of Gerhard's fountain at Augsburg by their personification of four specific rivers—in this instance, the Ybbs, the March, the Traun, and the Enns. At Vienna, Donner conceived the Enns in the form of a bearded old man holding a ship's rudder (Gerhard's personification of the Lech incorporates a similar object) and with one leg dangling towards the ground. The dangling leg repeats a motif Donner employed very effectively in his group

St. Martin and the Beggar at Pressburg, but it is also a Baroque reinterpretation of a motif that can be traced back through Gerhard and Ammanati to Michelangelo's reclining nudes in the Medici Chapel in the church of San Lorenzo.

The female figures of the March and the Ybbs may be seen as a Baroque end-product in which stylistic elements from both Renaissance and Classical elements have been assimilated. This is not to belittle Donner's genius, for like any truly imaginative artist, he used assimilation to generate new and original interpretations of traditional sculptural types. With the Vienna fountain, he in effect reversed the normal relation of sculpture and viewer in previous sculptural fountains: in a typically Baroque manner he broke down the barrier between the spectator and a work of art and drew the viewer into the composition like a member of the audience who is suddenly brought on stage during a theatrical production. Donner achieved this effect by turning some of his figures inward so that their gaze is directed either to other figures around the basin or towards the inner area of the basin itself. Thus while the Ybbs looks outward, the March faces in, as if gazing toward the Enns; and so an invisible bond is established between them as if they were involved in some kind of telepathic *conversazione*.

The Enns, for all its carefully studied anatomical detail, seems at first inert and passive; but the dangling leg and extended left hand, even in the bronze copy now standing in the Mehlmarkt, add a spatial dimension which carries the composition beyond the architectural confines of its setting to blur the normal separation

Opposite page: Personification of the Enns (bronze copy) from G.R. Donner's Mehlmarkt Fountain *in Vienna.*

Top: Personification of the March (bronze copy) from the Mehlmarkt Fountain.

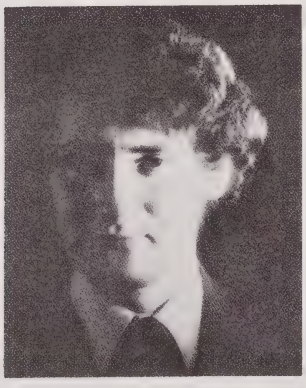
Bottom: Personification of the Traun with trident (bronze copy) from the Mehlmarkt Fountain.

Bronze Neptune from the Leopold Fountain *in Innsbruck.*

between sculpture and spectator. The inward gaze of the Enns draws the spectator into participation with the figures in an implosive approach to the centre of the fountain.

It is with the figure of the Traun, however, that Donner has gone furthest in his Baroque illusionism, and has transformed the Ammanati-Bologna tradition into something entirely new. In earlier fountains the figures had normally been confined within the limits of the basin; but in Vienna, Donner completely overthrew this convention. By degrees, from the March through the Enns to the Ybbs, the conventional relationship of figure to basin is altered and reversed; the climax comes in the dramatic figure of the Traun, a muscular male nude who appears to stand outside the basin, as if he had stepped forward from the outside world, and were leaning across the wall of the reservoir spear in hand to catch a fish that swims inside.

Donner's fountain is separated from Ammanati's *Neptune Fountain* in the Piazza della Signoria in Florence by a span of 163 years, and yet it is in every sense the lineal descendant of the Ammanati fountain —a remarkable tribute to the longevity of an Italian sculptural type translated into a Germanic idiom.



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Photos by K. Corey Keeble, ROM.

Recent Publications

Tertiary Mammals of Saskatchewan Part V: The Oligocene Entelodonts, ROM Life Sciences Contribution 122, Loris S. Russell, 42 pp., illustrated, $2.75 paper

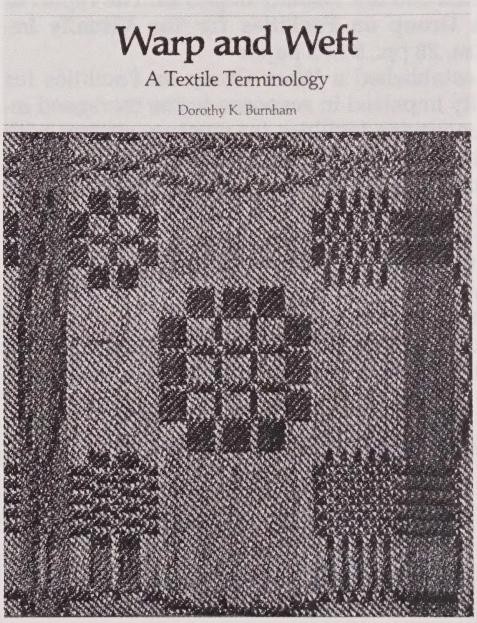
Systematics, Osteology and Phylogenetic Relationships of Fishes of the Ostariophysan Subfamily Anostominae (Characoidei, Anostomidae), ROM Life Sciences Contribution 123, Richard Winterbottom, 116 pp., illustrated, $7.50 paper

The Vegetation and Phytogeography of Coastal Southwestern James Bay, ROM Life Sciences Contribution 124, J.L. Riley and S.M. McKay, 86 pp., illustrated, $5.50 paper

A New Species of Brachyhyops? (Mammalia, Artiodactyla) from the Oligocene Cypress Hills Formation of Saskatchewan, ROM Life Sciences Occasional Paper No. 33, Loris S. Russell, 8 pp., illustrated, $0.85 paper

Mammal Collectors' Manual: A Guide for Collecting, Documenting, and Preparing Mammal Specimens for Scientific Research, ROM Life Sciences Miscellaneous Publication, D.W. Nagorsen and R.L. Peterson, 80 pp., illustrated, $6.50 paper
A guide that will serve as a set of standards for anyone collecting mammals for scientifc specimens. It will be useful not only for museum biologists and mammalogy students but for a variety of laboratory scientists who may find it necessary to prepare voucher specimens for their research. Naturalists and wildlife biologists wanting to prepare museum specimens for rare or unusual mammals obtained from hunters, trappers, or road kills should also find this manual helpful.

Warp and Weft: A Textile Terminology, ROM, Dorothy K. Burnham, 232 pp., illustrated, $30.00 cloth
Firmly based on internationally accepted multilingual vocabularies of the Centre International d'Étude des Textiles Anciens, *Warp and Weft* provides a practical answer to the growing need for a general reference book of concise technical information on which a wide understanding and appreciation of textiles might be based. It includes more than 550 entries, mainly on weaving techniques. Most entries are accompanied by corresponding words in other languages (French, German, Italian, Portuguese, Spanish, and Swedish). The terminology is well and generously illustrated with 120 diagrams of weaves and 200 superb photographs of textiles from the ROM's wide-ranging collections. This is a comprehensive work of major importance that will be of value to all whose disciplines include work of any kind with textiles. It should also find a place on the reference shelves of both public and school libraries and it will provide stimulating browsing for the non-specialist.



A Catalogue of British and Irish Prehistoric Bronzes in the Royal Ontario Museum, ROM, Francis Pryor, 88 pp., illustrated, $12.50 cloth
This important catalogue records the ROM's collection of British and Irish prehistoric bronzes, most of which have never been published. The first part of the catalogue lists implements in typological categories, subdivided under two headings: Britain and Ireland. The second section covers ornaments under the same headings. The catalogue is followed by a chapter on metal compositional analyses and this is followed by a provenance index and bibliography.

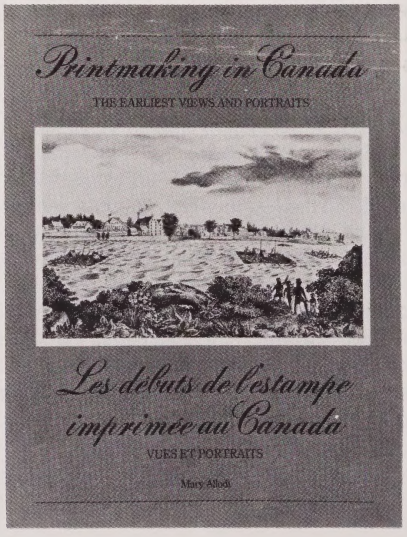
The Journal of Jens Munk 1619–1620, ROM, W.A Kenyon, 56 pp., illustrated, $3.75 paper
On 9 May 1619 the Danish sea captain Jens Munk left Copenhagen with two ships, the *Unicorn* and the *Lamprey,* and a crew of sixty-four men to search for the Northwest Passage. On 21 September 1620 he arrived back in Norway with only two men still alive. The rest had been buried in the small cove on the shore of Hudson Bay where he had wintered, opposite the present town of Churchill, Manitoba. The story of what happened to Munk and his men during those sixteen months is recounted here in Munk's own words rendered into modern English by Walter Kenyon from an earlier translation. It is an enthralling tale of ghastly sufferings, incredible determination, and almost superhuman endurance.

The Museum and the Visually Impaired: The report of the Work Group on Facilities for the Visually Impaired, ROM, 28 pp., $3.75 paper
The ROM established a Work Group on Facilities for the Visually Impaired in response to the increased interest in improving facilities for museum visitors with special needs. This report presents its findings and recommendations. It is hoped the report will be of assistance to those involved in planning the ROM's new and refurbished galleries so that provisions may be made for the needs of the visually impaired. Although written with this Museum's current renovation and expansion project in mind, the report can also be a useful source of information for other musems and galleries undergoing similar projects or with similar concerns.

Photos by Brian Boyle, ROM.

Ancient Lamps in the Royal Ontario Museum: I Greek and Roman Clay Lamps, ROM, J.W. Hayes, 240 pp., illustrated, $22.50 cloth
This publication, the first of two projected volumes, catalogues the ROM's collections of ancient Greek and Roman clay lamps. The book describes both wheel-made and mould-made lamps from all regions of the ancient Classical world and includes their successors in the Roman tradition down to the 7th and 8th centuries A.D. There are 568 entries, each with individual detailed descriptions and references to comparative material. The sixty-eight plates include profile drawings as well as photographs.

Printmaking in Canada: The Earliest Views and Portraits / Les débuts de l'estampe imprimée au Canada: vues et portraits, ROM, Mary Allodi, 272 pp., illustrated, $5.00 paper
Published to accompany the exhibition of the same name, this book is a valuable reference work on early Canadian printmaking. The exhibition and catalogue grew out of a research project to locate and catalogue the separately issued views and portraits printed in Canada up to 1850. The catalogue is in English and French. Each of the 104 entries comprises an illustration accompanied by a descriptive commentary which includes the technical and social history of the print, biographical notes on artists and printers, and locations of existing impressions. The introduction summarizes the results of all research to date. The first work of its kind on early printmaking in Canada, the book should prove to be a valuable reference source.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